

Appln No. 10/500,939
Pascal Guerrero
Office Action dated July 21, 2005

This listing of claims will replace all prior versions and listing of claims in the application.

LISTING OF CLAIMS

1. (currently amended) A method for controlling the temperature of the gases entering an internal combustion engine (58), comprising, particularly of an automotive vehicle, characterized in that the circulating gases are circulated in a liquid/gas heat exchanger (2, 12, 22, 34, 44); prior to entering of circulated gases post circulation into the internal combustion heat engine (58), and circulating in that a high temperature liquid and/or a low temperature liquid is circulated in the liquid/gas heat exchanger in order to heat and/or cool the gases (84) as required.
2. (currently amended) A liquid/gas heat exchanger for use in tThe method of claim 1, characterized in that wherein the heat exchanger is a single single-stage heat exchanger (2, 12) and the heat exchanger has a in that valve means (4) are provided to circulate either a low temperature liquid, or a high temperature liquid, or a mixture of both liquids, in the heat exchanger (2, 12).
3. (currently amended) The liquid/gas heat exchanger as claimed in The method of claim 2, characterized in that it , wherein the liquid/gas heat exchanger comprises a section (14) through which the engine intake air (15) passes and a section (16) through which a recirculated fraction of the exhaust gases (18) passes.
4. (currently amended) The method of claim 1 wherein the A liquid/gas heat exchanger for use in the method as claimed in claim 1, characterized in that it comprises a high temperature stage (24, 36) in which a high temperature liquid can circulate, and a low temperature stage (26, 38) in which the low temperature liquid can circulate, and an interconnecting

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means (76, 86, 106) for controlling the circulation of the high temperature and low temperature liquids as required.

5. (currently amended) ~~The heat exchanger as claimed in The method of claim 4, characterized in that wherein the liquid/gas heat exchanger the high temperature stage (36) comprises a section (40) through which the engine intake air (41) passes and a section (42) through which a recirculated fraction (43) of the exhaust gases passes.~~
6. (currently amended) ~~The liquid/gas heat exchanger as claimed in The method of claim 5, characterized in that wherein the low temperature stage (38) also comprises a section (42) through which a recirculated fraction (43) of the exhaust gases passes.~~
7. (currently amended) A management device for managing the temperature of the gases entering a heat engine (58), ~~particularly of an automotive vehicle~~, comprising a main loop (52) equipped with a main pump (60) for circulating a heat transfer fluid between the heat engine (58); and a main radiator (64) for cooling at high temperature; ~~characterized in that it comprises a secondary loop (54) including a secondary low temperature radiator (78); the device further comprising a liquid/gas radiator (2, 12, 22, 34, 44) as claimed in one of claims 2 to 6, and an~~ interconnecting means (76, 86, 106) for circulating the heat transfer fluid in the liquid/gas heat exchanger as required to heat and/or cool the gases (84) entering the engine (58).
8. (currently amended) The management device as claimed in claim 7, ~~characterized in that it comprises further comprising a single~~ single-stage heat exchanger (2, 12) and a three-way valve (76) for circulating either the hot heat transfer fluid directly leaving the internal combustion engine (58) in the heat exchanger, or a cold heat transfer fluid leaving the low temperature radiator (78), or an adequate mixture of both fluids.
9. (currently amended) The management device as claimed in claim 7, ~~characterized in that it comprises further comprising~~ a single-stage heat exchanger (2, 12) and a branch on the high temperature fluid circuit equipped with an additional circulating pump (86), a valve (76) for

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circulating either the hot heat transfer fluid directly leaving the heat engine (58), or the cold heat transfer fluid cooled in the low temperature radiator (78), or a mixture of both fluids.

10. (currently amended) The management device as claimed in claim 7, ~~characterized in that it comprises further comprising a single two-stage heat exchanger (22, 34, 44) having a high temperature stage and a low temperature stage, a three-way valve (76) for circulating the hot heat transfer fluid leaving the internal combustion engine (58) in the high temperature stage, and a cold heat transfer fluid cooled in the low temperature radiator (68) in the low temperature stage of the heat exchanger.~~
11. (currently amended) The management device as claimed in claim 7, ~~characterized in that it comprises further comprising a two-stage heat exchanger (22, 34, 44) having a high temperature stage and a low temperature stage, a two-way valve (106) for circulating the hot heat transfer fluid directly leaving the internal combustion engine (58) in the high temperature stage of the heat exchanger (22, 34, 44), and an additional loop equipped with a circulating pump (86) for circulating the cold heat transfer fluid cooled in the low temperature radiator (78) in the low temperature stage of the heat exchanger (22, 34, 44).~~
12. (new) The method of claim 1, wherein the internal combustion engine is part of an automotive vehicle.
13. (new) The method of claim 4, wherein the internal combustion engine is part of an automotive vehicle.
14. (new) An automotive vehicle having a management device as in claim 7.
15. (new) An automotive vehicle having a management device as in claim 8.
16. (new) An automotive vehicle having a management device as in claim 9.

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17. (new) An automotive vehicle having a management device as in claim 10.

18. (new) An automotive vehicle having a management device as in claim 11.